UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/607,856 | 06/27/2003 | Pavel Shuk | R302.12-0062 | 7101 |

27367 7590 01/18/2007

WESTMAN CHAMPLIN & KELLY, P.A.
SUITE 1400
900 SECOND AVENUE SOUTH
MINNEAPOLIS, MN 55402-3319

| EXAMINER | |
|---|---|
| VATHYAM, SUREKHA | |
| ART UNIT | PAPER NUMBER |
| 1753 | |

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|---|---|---|
| 3 MONTHS | 01/18/2007 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| Office Action Summary | Application No. | Applicant(s) |
|---|---|---|
| | 10/607,856 | SHUK ET AL. |
| | Examiner | Art Unit |
| | Surekha Vathyam | 1753 |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *01 December 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-6,8-30 and 32-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,8-30 and 32-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 December 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

## DETAILED ACTION

### *Specification*

1. The disclosure is objected to because of the following informalities: Page 1, first paragraph, 4th line, "2003" should be corrected to "2002".

Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1 – 6 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains new subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Specifically, independent claims 1, 13 and 23 have been amended to include the limitation "at a catalytic activity rate that is resistant to change as a function of elevated temperature or the presence of sulfur" (claim 1, lines 19 – 21), " and are adapted for resistance to elevated temperature and to the presence of sulfur" (claim 13, lines 18 – 20) and "and is adapted for resistance to ambient sulfur and to elevated temperature" (claim 23, lines 18 – 19), respectively. Applicant has not pointed out where the amended claims are supported, nor does there appear

to be a written description of the claim limitations discussed above, in the application as filed.

4. Claim 5 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains new subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 5, line 2 has been amended to include the limitation "catalyst comprises doped lanthanum manganite". Applicant has not pointed out where the amended claim is supported, nor does there appear to be a written description of the claim limitation "catalyst comprises doped lanthanum manganite", in the application as filed with regards to the RTD device (see specification pages 9 – 14 under the heading "Sulfur resistive RTD type combustible sensor").

5. Claim 6 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains new subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 6, line 2 has been amended to include the limitation "catalyst comprises doped ceria". Applicant has not pointed out where the amended claim is supported, nor does there appear to be a written description of the claim limitation "catalyst comprises doped ceria", in the application as filed with regards to the RTD device

(see specification pages 9 – 14 under the heading "Sulfur resistive RTD type combustible sensor").

6. Claim 30 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains new subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 30, lines 2 – 4 have been amended to include the limitation "working electrode is constructed from a doped lanthanum manganite". Applicant has not pointed out where the amended claim is supported, nor does there appear to be a written description of the claim limitation "working electrode is constructed from a doped lanthanum manganite", in the application as filed with regards to the solid state device for determining the concentration of oxygen in a gas phase (see specification pages 14 – 17 under the heading "Sulfur resistive oxygen sensor").

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1 – 6 and 8 – 30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. Amended independent claim 1 (lines 19 – 21) recites the limitation "at a catalytic activity rate that is resistant to change as a function of elevated temperature or the presence of sulfur". It is unclear what the "at" applies to.

10. The term "elevated" in each of independent amended claims 1, 13 and 23 is a relative term, which renders the claim indefinite. The term "elevated temperature" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably appraised of the scope of the invention.

### *Claim Rejections - 35 USC § 103*

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that

the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

14. Claims 1 – 4 and 10 – 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sheridan et al. (US 5,627,328) in view of Dalla Betta et al. (US 5,314,828).

Regarding claim 1, Sheridan discloses a process analytic system (12) comprising: a device (38) for sensing a concentration of a combustible species of interest (column 7, lines 12 – 14) – in an exhaust stream (column 5, lines 42 – 49); a controller (18) coupled to the device and configured to receive measurements of the concentration of the combustible species (column 9, lines 66 – column 10, line 5 and column 11, lines 7 – 10); and a blowback system (column 8, lines 64 – 66) coupled to the device (38) and the controller (18) (column 10, lines 8 – 13), the blowback system being configured to responsively reverse gas flow through the device (column 8, line 66 – column 9, line 9). Sheridan also discloses the device to be a catalytic heat-flux sensor that measures differential changes in temperature (column 9, lines 60 – 62) but does not explicitly disclose the details of the device.

Dalla Betta ('828) discloses the device (see Figs. 1 – 4 and 6) comprises: a holder (626); a first RTD (114) disposed in a first cover (112), wherein the first cover (112) is mounted to the holder (626 via 110); a second RTD (124) disposed in a second cover (126), wherein the second cover (126) is mounted to the holder (626 via 122); and wherein the first cover (112) comprises a catalyst thereon which has a higher catalytic activity to the species of interest than the second cover (126) (column 4, lines 13 – 22 and column 7, lines 14 – 22) at a catalytic activity rate that is resistant to change as a function of elevated temperature (see Example 4, column 14, lines 23 – 61) or the presence of sulfur (see fig. 9 and Example 5, column 14, line 64 – column 15, line 61).

It would have been obvious to one of ordinary skill in the art to have modified the system of Sheridan ('328) to include the device of Dalla Betta ('828) because as Dalla Betta ('828) explains the device provides the benefit of detecting low concentrations of nitrogen oxides with good accuracy in exhaust streams and the presence of other pollutants including sulfur does not substantially affect the accuracy (column 15, lines 56 – 61). Sheridan ('328) expressly states that sulfur is present in exhausts and could damage the sensors used to detect concentration of gas samples (column 1, line 67 – column 2, line 5).

Regarding claim 2, Dalla Betta ('828) discloses the first cover (112) is formed from a tube (see Fig. 1).

Regarding claim 3, Dalla Betta ('828) discloses the second cover (112) is formed as a tube (see Fig. 1).

Regarding claim 4, Dalla Betta ('828) discloses the catalyst is disposed on the first cover (112) as a film (column 6, lines 36 - 40).

Regarding claim 10, Dalla Betta ('828) discloses the second cover (126) is constructed from a catalyst-free (column 7, lines 14 – 18) stainless steel tube (column 15, line 4 – 6).

Regarding claim 11, Dalla Betta ('828) discloses at least one of the first (112) and second cover (126) is joined to the holder (626 via 110 and 122 respectively) using thermally insulative material (column 5, line 54 – column 6, line 11 and column 7, lines 49 – 51).

Regarding claim 12, Dalla Betta ('828) discloses the thermally insulative material is selected from the group of ceramic cement, adhesive, and high-temperature epoxy (column 5, line 54 – column 6, line 11 and column 7, lines 49 – 51).

15. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sheridan et al. (US 5,627,328) in view of Dalla Betta et al. (US 5,314,828) as applied to claim 1 above, and further in view of Vaughey et al. (US 6,521,202).

Regarding claim 5, Sheridan ('328) in view of Dalla Betta ('828) does not explicitly disclose the catalyst comprises doped lanthanum manganite.

Vaughey ('202) teaches a catalyst comprising doped lanthanum manganite (column 2, lines 34 – 49).

It would have been obvious to one of ordinary skill in the art to have modified the device of Dalla Betta ('828) in the system of Sheridan ('328) to substitute doped lanthanum manganite as the catalyst as taught by Vaughey ('202) because as Vaughey ('202) explains the doped lanthanum manganite provides the benefit of maintaining excellent conductivity and catalytic properties while also having increased oxide ion conductivity (column 2, lines 23 – 26).

16. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sheridan et al. (US 5,627,328) in view of Dalla Betta et al. (US 5,314,828) as applied to claim 1 above, and further in view of Krumpelt et al. (US 6,110,861).

Regarding claim 6, Sheridan ('328) in view of Dalla Betta ('828) does not explicitly disclose the catalyst comprises doped ceria.

Krumpelt ('861) teaches a catalyst comprising doped ceria (column 1, lines 55 – 59).

It would have been obvious to one of ordinary skill in the art to have modified the device of Dalla Betta ('828) in the system of Sheridan ('328) to substitute doped ceria as the catalyst as taught by Krumpelt ('861) because as Krumpelt ('861) explains that doped ceria has the benefit of being an oxide ion conduction material (column 1, lines 53 – 55).

17. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sheridan et al. (US 5,627,328) in view of Dalla Betta et al. (US 5,314,828) as applied to claim 1 above, and further in view of Lauder (US 3,897,367).

Regarding claim 8, Sheridan ('328) in view of Dalla Betta ('828) does not explicitly disclose the catalyst comprises perovskite.

Lauder ('367) teaches a catalyst comprising perovskite (column 1, lines 5 – 8 and column 5, lines 61 – 63).

It would have been obvious to one of ordinary skill in the art to have modified the device of Dalla Betta ('828) in the system of Sheridan ('328) to substitute perovskite as the catalyst as taught by Lauder ('367) because as Lauder ('367) explains perovskite provides the benefit of stability and durability at high temperatures and has been shown to catalyze the oxidation of hydrocarbons and carbon monoxide (column 7, lines 4 – 17).

18. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sheridan et al. (US 5,627,328) in view of Dalla Betta et al. (US 5,314,828) as applied to claim 1 above, and further in view of Valentine et al. (US 2,916,358).

Regarding claim 9, Sheridan ('328) in view of Dalla Betta ('828) does not explicitly disclose the catalyst comprises hopcalite.

Valentine ('358) teaches a catalyst comprising hopcalite (column 2, lines 23 – 28).

.It would have been obvious to one of ordinary skill in the art to have modified the device of Dalla Betta ('828) in the system of Sheridan ('328) to substitute hopcalite as the catalyst as taught by Valentine ('358) because it causes the combustion of carbon monoxide and allows for its detection in a

reliable and speedy manner (column 1, lines 15 – 30) as explained by Valentine ('358).

19. Claims 13 – 16 and 18 – 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sheridan et al. (US 5,627,328) in view of Yokota et al. (US 6,368,479).

Regarding claim 13, Sheridan ('328) discloses a process analytic system (12) comprising: a device (38) for configured for determining a concentration of a combustible species of interest (column 7, lines 12 – 14) – in an exhaust stream (column 5, lines 42 – 49); a controller (18) coupled to the device and configured to receive measurements of the concentration of the combustible species (column 9, lines 66 – column 10, line 5 and column 11, lines 7 – 10); and a blowback system (column 8, lines 64 – 66) coupled to the device (38) and the controller (18) (column 10, lines 8 – 13), the blowback system being configured to responsively reverse gas flow through the device (column 8, line 66 – column 9, line 9). Sheridan ('328) also discloses a sensor comprising a solid electrolyte (column 7, lines 21 – 23) but does not explicitly disclose the reference and working electrodes.

Yokota ('479) teaches a device (see figs. 1 and 10) comprising: a solid electrolyte (6); a reference electrode (2, 4) that is inactive to the combustion reaction (column 6, lines 11 –15); and a working electrode (3, 5) that is catalytically active to the combustion reaction (column 6, 55 – 65), wherein the working electrode (3, 5) and the reference electrode (2, 4) are coupled to the

solid electrolyte (6) (see fig 1. and column 6, lines 55 –58) and are adapted for resistance to elevated temperature and to the presence of sulfur (column 1, lines 7 – 14).

It would have been obvious to one of ordinary skill in the art to have modified the system of Sheridan ('328) to include the device of Yokota ('479) because as Yokota ('479) explains the device has the benefit of measuring a concentration of carbon monoxide contained in an exhaust stream and is operable at high temperatures and excludes the effects of coexisting sulfur dioxide on such measurements (column 1, lines 7 – 14). Sheridan ('328) discloses a device for the measurement of concentration of carbon monoxide in an exhaust stream (column 7, lines 12 – 14) and expressly states that sulfur is present in exhausts and could damage the sensors used to detect concentration of gas samples (column 1, line 67 – column 2, line 5), and also recognizes the inconvenience of sensors that do not operate at high temperature (column 1, lines 60 – 63).

Regarding claim 14, Yokota ('479) discloses the reference and working electrodes are couplable to the exhaust stream (column 4, lines 25 – 42).

Regarding claim 15, Yokota ('479) discloses the solid electrolyte (6) is selected from the group consisting of doped zirconia, ceria, and bismuth oxide (column 5, lines 57 – 64).

Regarding claim 16, Yokota ('479) discloses the reference electrode (2, 4) is constructed from gold (column 3, lines 54 – 58).

Regarding claim 18, Yokota ('479) discloses the working electrode (3) is constructed from platinum (column 7, lines 17 – 20).

Regarding claim 19, Yokota ('479) discloses the working electrode (3, 5) is constructed from a metal oxide (column 7, lines 26 – 28, column 8, lines 28 – 34).

Regarding claim 20, Yokota ('479) discloses the working electrode (3, 5) is constructed using doped ceria (column 5, lines 57 – 64).

20. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sheridan et al. (US 5,627,328) in view of Yokota et al. (US 6,368,479) as applied to claim 13 above, and further in view of Blumenthal et al. (US 4,101,404).

Regarding claim 17, the device of Sheridan ('328) in view of Yokota ('479) does not explicitly disclose the reference electrode (2, 4) being constructed from doped lanthanoid chromite.

Blumenthal ('404) teaches constructing an electrode from doped lanthanum chromite (see column 5, lines 55 - 66).

It would have been obvious to one of ordinary skill in the art to have modified the device of Yokota ('479) in the system of Sheridan ('328) by constructing the reference electrode (2, 4) from doped lanthanum chromite as taught by Blumenthal ('404) because Blumenthal ('404) explains that doped lanthanum chromite "solves the problem of electrode corrosion" (column 5, lines 61 - 62).

21. Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sheridan et al. (US 5,627,328) in view of Yokota et al. (US 6,368,479) as applied to claim 13 above, and further in view of Isenberg (US 5,106,654).

Regarding claims 21 and 22, the device of Sheridan ('328) in view of Yokota ('479) does not explicitly disclose the electrode being constructed from doped lanthanum manganite (claim 21) or from perovskite (claim 22).

Isenberg ('654) teaches constructing an electrode from doped lanthanum manganite and teaches constructing an electrode from perovskite (column 1, lines 18 – 25).

It would have been obvious to one of ordinary skill in the art to have modified the device of Yokota ('479) in the system of Sheridan ('328) by constructing the electrode from doped lanthanum manganite and from perovskite as taught by Isenberg ('654) because Isenberg ('654) explains that doped lanthanum manganite and perovskite make electrodes particularly suitable for high temperature applications (column 1, lines 18 - 25).

22. Claims 23 – 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sheridan (US 5,627,328) in view of by Isenberg (US 4,428,817).

Regarding claim 23, Sheridan ('328) discloses a process analytic system (12) comprising: a solid state device (48) for determining the concentration of oxygen in a gas phase (column 7, lines 21 – 23): a controller (18) coupled to the solid state device and configured to receive measurements of the concentration

of the oxygen (column 9, lines 66 – column 10, line 5 and column 11, lines 7 – 10); and a blowback system (column 8, lines 64 – 66) coupled to the solid state device (48) and the controller (18) (column 10, lines 8 – 13), the blowback system being configured to responsively reverse gas flow through the solid state device (column 8, line 66 – column 9, line 9). Sheridan ('328) also discloses the solid state device comprising a solid electrolyte (column 7, lines 21 – 23) but does not explicitly disclose the reference and working electrodes.

Isenberg ('817) teaches a solid state device (9) for determining the concentration of oxygen in a gas phase (column 1, lines 8 – 11), the device comprising: solid electrolyte (33) a reference electrode (35) coupled to the solid electrolyte (33); and a working electrode (37) constructed from a mixed ion/electron conducting oxide (column 3, lines 55 – 60), wherein the working electrode is coupled to the solid electrolyte (see Fig. 1) and is adapted for resistance to ambient sulfur and to elevated temperature (column 4, lines 40 – 49).

It would have been obvious to one of ordinary skill in the art to have modified the system of Sheridan ('328) to include the solid state device of Isenberg ('817) because it has the benefit of being able to measure combustibles and oxygen in the presence of each other (column 1, lines 8 – 11). Sheridan ('328) discloses a sensor army (38) to measure both combustibles and oxygen in an exhaust stream (column 7, lines 12 – 16).

Regarding claim 24, Isenberg ('817) discloses the solid electrolyte (33) is selected from the group consisting of zirconia and ceria (column 3, lines 39 – 42).

Regarding claim 25, Isenberg ('817) discloses the reference electrode (35) is constructed from the group consisting of platinum, a metal oxide electrode, and a mixed conducting electrode (column 3, line 46 – 51).

Regarding claim 26, because of the phrase "group consisting of platinum, a metal oxide electrode, and a mixed conducting electrode" recited in parent claim 25, and the disclosure of platinum in column 3, lines 46 – 51 of Isenberg ('817), claim 26 is anticipated regardless of any disclosure concerning perovskite.

Regarding claim 27, because of the phrase "group consisting of platinum, a metal oxide electrode, and a mixed conducting electrode" recited in parent claim 25, and the disclosure of platinum in column 3, lines 46 – 51 of Isenberg ('817), claim 27 is anticipated regardless of any disclosure concerning fluorite.

23. Claims 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sheridan (US 5,627,328) in view of by Isenberg (US 4,428,817) as applied to claim 23 above, and further in view of Ruka et al. (US 5,021,304).

Regarding claim 28, Sheridan ('328) in view of Isenberg ('817) does not explicitly disclose the working electrode (37) of Isenberg ('817) is constructed from ceria or its solid solution doped with at least one mixed valency element.

Ruka ('304) teaches a working electrode (10) is constructed from ceria or its solid solution (column 4, lines 44 – 49) doped with at least one mixed valency element (column 4, lines 49 – 59).

It would have been obvious to one of ordinary skill in the art to have modified the device of Isenberg ('817) in the system of Sheridan ('328) by constructing the electrode from ceria or its solid solution doped with at least one mixed valency element as taught by Ruka ('304) because Ruka ('304) explains that doped ceria provides the electrode with improved sulfur resistance (column 1, lines 16 – 37).

Regarding claim 29, Ruka ('304) teaches the mixed valency element is one of terbium and praseodymium (column 4, lines 55 – 56).

24. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sheridan (US 5,627,328) in view of by Isenberg (US 4,428,817) as applied to claim 23 above, and further in view of Isenberg (US 5,106,654).

Regarding claim 30, Sheridan ('328) in view of Isenberg ('817) does not explicitly disclose the working electrode (37) of Isenberg ('817) to be constructed from a doped lanthanum manganite.

Isenberg ('654) teaches constructing an electrode from doped lanthanum manganite (column 1, lines 18 – 25).

It would have been obvious to one of ordinary skill in the art to have modified the device of Isenberg ('817) in the system of Sheridan ('328) by

constructing the electrode from doped lanthanum manganite as taught by Isenberg ('654) because Isenberg ('654) explains that doped lanthanum manganite makes electrodes particularly suitable for high temperature applications (column 1, lines 18 - 25).

25. Claims 32 – 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sheridan et al. (US 5,627,328) in view of Dalla Betta et al. (US 4,355,056).

Regarding claim 32, Sheridan ('328) discloses a process analytic system (12) comprising: a sample probe (10) having at least one sensor (44, 46, 48) disposed therein; a controller (18) coupled to the sample probe (10) to measure a parameter of an exhaust stream (column 10, line 66 – column 11, line 12); and a blowback system (column 8, lines 64 – 67) coupled to the sample probe (10) and the controller (18) to responsively reverse gas flow through the sample probe (84, column 8, line 67 – column 9, line 4).

Sheridan ('328) does not explicitly disclose the sensor (44, 46, 48) being sulfur-resistant.

Dalla Betta ('056) teaches a sensor that is sulfur-resistant (column 4, lines 55 – 58).

It would have been obvious to one of ordinary skill in the art to have modified the process analytic system (12) of Sheridan ('328) by having the sensor (44,46, 48) in the sample probe (10) be sulfur-resistant as taught by Dalla Betta ('056) because it provides the benefit of relative insensitivity to sulfur poisoning and ability to operate at elevated temperature for extended periods of

time as explained by Dalla Betta ('056) (column 4, lines 55 – 58). Sheridan ('328) expressly states that sulfur is present in exhausts and could damage the sensors used to detect concentration of gas samples (column 1, line 67 – column 2, line 5), and also recognizes the inconvenience of sensors that do not operate at high temperature (column 1, lines 60 – 63).

Regarding claim 33, Sheridan ('328) discloses the sample probe (10) includes a plurality of sensors (44, 46, 48).

Sheridan ('328) does not explicitly disclose the plurality of sensors (44, 46, 48) being sulfur-resistant.

Dalla Betta ('056) teaches a sensor that is sulfur-resistant (column 4, lines 55 – 58).

It would have been obvious to one of ordinary skill in the art to have modified the process analytic system (12) of Sheridan ('328) by having the plurality of sensors (44,46, 48) in the sample probe (10) be sulfur-resistant as taught by Dalla Betta ('056) because it provides the benefit of relative insensitivity to sulfur poisoning and ability to operate at elevated temperature for extended periods of time as explained by Dalla Betta ('056) (column 4, lines 55 – 58). Sheridan ('328) expressly states that sulfur is present in exhausts and could damage the sensors used to detect concentration of gas samples (column 1, line 67 – column 2, line 5), and also recognizes the inconvenience of sensors that do not operate at high temperature (column 1, lines 60 – 63).

Regarding claim 34, Sheridan ('328) discloses the sensor (48) is an oxygen sensor (column 7, lines 13 – 23).

Regarding claim 35, Sheridan ('328) discloses the sensor (44, 46) is a combustible sensor (column 7, lines 13 – 23).

Regarding claim 36, Sheridan ('328) discloses the sample probe (10) includes a particulate filtering enclosure (54).

### ***Response to Arguments***

26. Applicant's arguments filed 12/01/06 have been fully considered but they are not persuasive. Applicant argues that there is insufficient motivation to have combined the teachings of Sheridan et al. (US 5,627,328) and Dalla Betta et al. (US 4,355,056). Applicant correctly points out that the utility of an element set forth in a particular reference (such as Dalla Betta ('056)) does not necessarily motivate its combination with another arbitrary reference. However in the instant case, not only does Dalla Betta ('056) explain the benefit of providing insensitivity to sulfur and ability to operate at higher temperature (column 4, lines 55 – 58), but also Sheridan ('328) expressly states that sulfur is present in exhausts and could damage the sensors used to detect concentration of gas samples (column 1, line 67 – column 2, line 5), and also recognizes the inconvenience of sensors that do not operate at high temperature (column 1, lines 60 – 63). Therefore, not only does Dalla Betta ('056) teach benefits, but also Sheridan ('328) suggests a need for such benefits.

***Conclusion***

27. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Surekha Vathyam whose telephone number is 571-272-2682. The examiner can normally be reached on 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SV
January 3, 2007

NAM NGUYEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700